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A taxonomic review of the *Dipsadoboa duchesnei* complex

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Abstract. A study of all available specimens belonging to the *Dipsadoboa duchesnei* complex demonstrates that two different species are involved: *D. duchesnei* (Boulenger, 1901) occurring in Nigeria, Cameroon, Gabon, Congo, Zaire and Central African Republic and *D. brevirostris* (Sternfeld, 1908) occurring in West Africa from Sierra Leone to Cameroon.

Key words. Reptilia, Serpentes, Boiginae, *Dipsadoboa duchesnei*, *Dipsadoboa brevirostris* n. comb., *Leptodira nigeriensis* n. syn., West- and Central Africa, taxonomy, distribution.

Introduction

In 1901, Boulenger described *Leptodira duchesnei* on the basis of two specimens from Mandungu, Upper Congo and from Umangi, Lower Congo, respectively. A few years later, Sternfeld (1908) described *Dipsadomorphus brevirostris* and *D. viridis* on the basis of three and one specimens from Cameroon, respectively.

In 1910, Müller arrived at the conclusion that *D. brevirostris* was a synonym of *duchesnei* and he was supported by Boulenger (in Müller, op. cit.). Müller apparently held the view that *viridis* was a valid species, however, he indicated that Boulenger was of the opinion that *viridis* was just an adult *duchesnei* and later Boulenger (1919a, b) himself referred *brevirostris* as well as *viridis* to the synonymy of *duchesnei*.

In 1913, Werner described *Leptodira nigeriensis* on the basis of a specimen from the delta of the Niger River, South Nigeria. Only Werner himself (1924a, b) and Barbour & Amaral (1927) apparently refer to this species and its status has remained questionable.

On the basis of a juvenile snake from Lambaréné, Gabon, Chabanaud (1916) described *Chaemaetortus aulicus ellenbergeri*. In 1971 this species, however, was referred to the synonymy of *duchesnei* (Broadley & Stevens).

In 1917, Chabanaud described *Leptodira myops* on the basis of a juvenile specimen from Gabon. This species was later referred to the synonymy of *nigeriensis* (Werner, 1924b).

In 1920, Chabanaud described *Leptodira guineensis* on the basis of four specimens from Diéké, French Guinea. Like *myops* this species was referred to the synonymy of *nigeriensis* (Werner, 1924a, b). Bogert (1940) held the view that *guineensis* was a synonym of *duchesnei*, whereas Loveridge (1941) held the view that *duchesnei* and *guineensis* differed in so many particulars that they were probably full species. Loveridge, however, compromised in reviving *guineensis* to subspecific rank only.

Laurent (1956) also questioned Bogert's (1940) proposal and considered *guineensis* to be a valid taxon. Laurent further questioned Boulenger's (1919b) synonymization of *viridis* and *brevirostris* with *duchesnei* as one of the types of *brevirostris* had too

many ventrals and too few caudals and as the type of *viridis* had too many ventrals and caudals compared to sympatric *duchesnei*.

This questioning, however, has remained unanswered and in order to judge the validity of *brevirostris* and *viridis*, to settle the categorial rank of *duchesnei* and *guineensis*, and eventually to evaluate the validity of *nigeriensis* most of the material available in larger museums has been borrowed and carefully examined.

Material and methods

In total 73 specimens have been examined. The abbreviations used for the collections involved are as follows (Leviton et al. 1985):

AMNH	American Museum (Natural History), New York
BH	Private collection of Barry Hughes
BMNH	British Museum (Natural History), London
CAS	California Academy of Sciences, San Francisco
FMNH	Field Museum of Natural History, Chicago
IRSNB	Institut Royal des Sciences Naturelles de Belgique, Brussels
MCZ	Museum of Comparative Zoology, Harvard
MHNG	Museum d'Histoire Naturelle, Geneva
MNHNP	Museum National d'Histoire Naturelle, Paris
NMB	Naturhistorisches Museum, Basel
NMW	Naturhistorisches Museum, Vienna
RGMC	Musée Royal de l'Afrique Centrale, Tervuren
USNM	National Museum of Natural History, Washington
ZFMK	Zoologisches Forschungsinstitut und Museum Alexander Koenig, Bonn
ZMB	Zoologisches Museum, Berlin
ZMUC	Zoological Museum, University of Copenhagen, Copenhagen

The methods used are outlined in earlier papers of Rasmussen (1985, 1986, 1989).

Systematic account

Dipsadoboa duchesnei (Boulenger, 1901)

Figs 1–4.

Leptodira duchesnii Boulenger, 1901: 10; syntypes BMNH 1946.1.8.39, a male collected by Mr. Kethulle and Mr. Gilson in Umangi, Bas Congo, and RGMC 476, a female collected in Mandungu at Itimbiri, Haut-Congo by Mr. Duchesne, respectively.

Dipsadomorphus brevirostris Sternfeld (part.), 1908: 411; syntypes ZMB 21709–21709 A (synonymized by Müller, 1910: 605).

Dipsadomorphus viridis Sternfeld, 1908: 411; holotype apparently lost (synonymized by Boulenger, 1919a: 287).

Leptodira nigeriensis Werner, 1913: 27; holotype apparently lost (Koepcke, in lit.). **New Synonymy.**

Chamaetortus aulicus ellenbergeri Chabanaud, 1916: 453; holotype MNHNP 1916: 453 (synonymized by Broadley & Stevens, 1971: 1).

Dipsadomorphus myops Chabanaud, 1918: 453; holotype MNHNP 1902.106 (synonymized with *Leptodira nigeriensis* by Werner, 1924a).

Dipsoglyphophis duchesnii, Barbour & Amaral, 1927: 26.

Dipsadoboa duchesnii, Bogert, 1940: 64.

Crotaphopeltis duchesnii duchesnii, Loveridge, 1941: 122.

Dipsadoboa duchesnei duchesnei, Laurent, 1956: 215.

Diagnosis

A West and Central African forest species of *Dipsadoboa* which has the following character combination: dorsals in 17–17–13 rows; ventrals 202–220 and 185–214, males and females, respectively; anal shields undivided — divided in three specimens, including one of the syntypes (RGMC 14356); subcaudals in 97–120+X

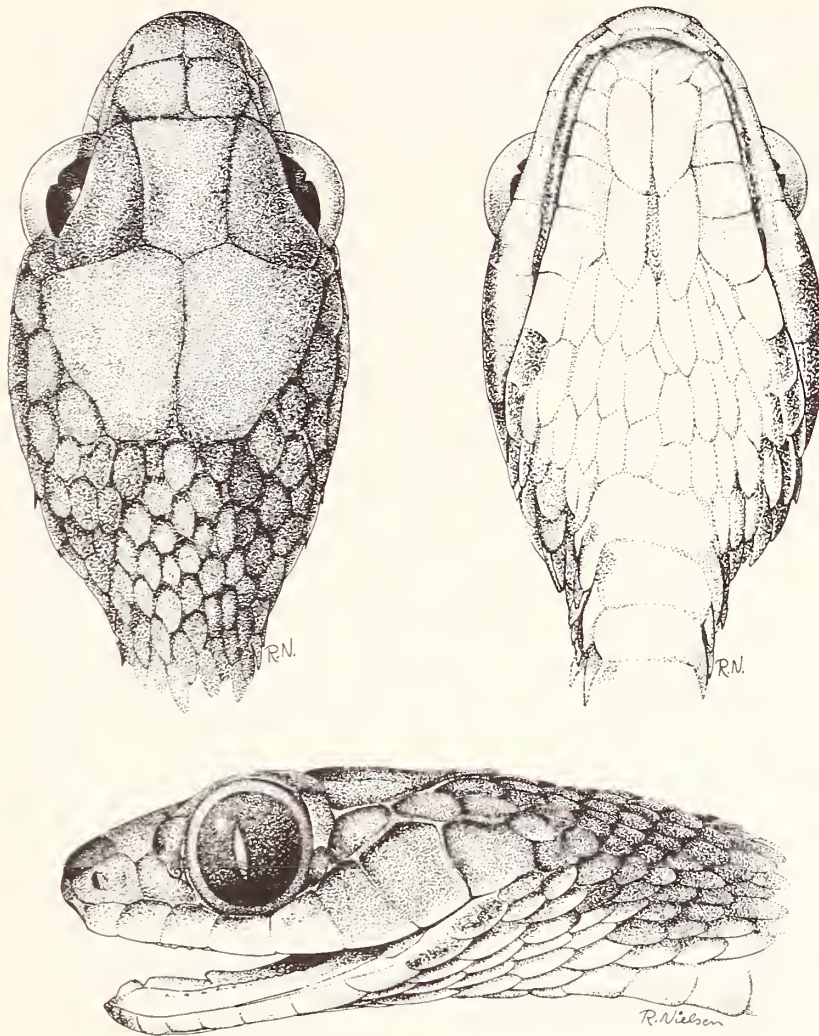


Fig. 1: Dorsal, ventral, and lateral views of the head of syntype (BMNH 1946.1.8.39) of *Dipsadoboa duchesnei*. Drawing: Robert Nielsen.

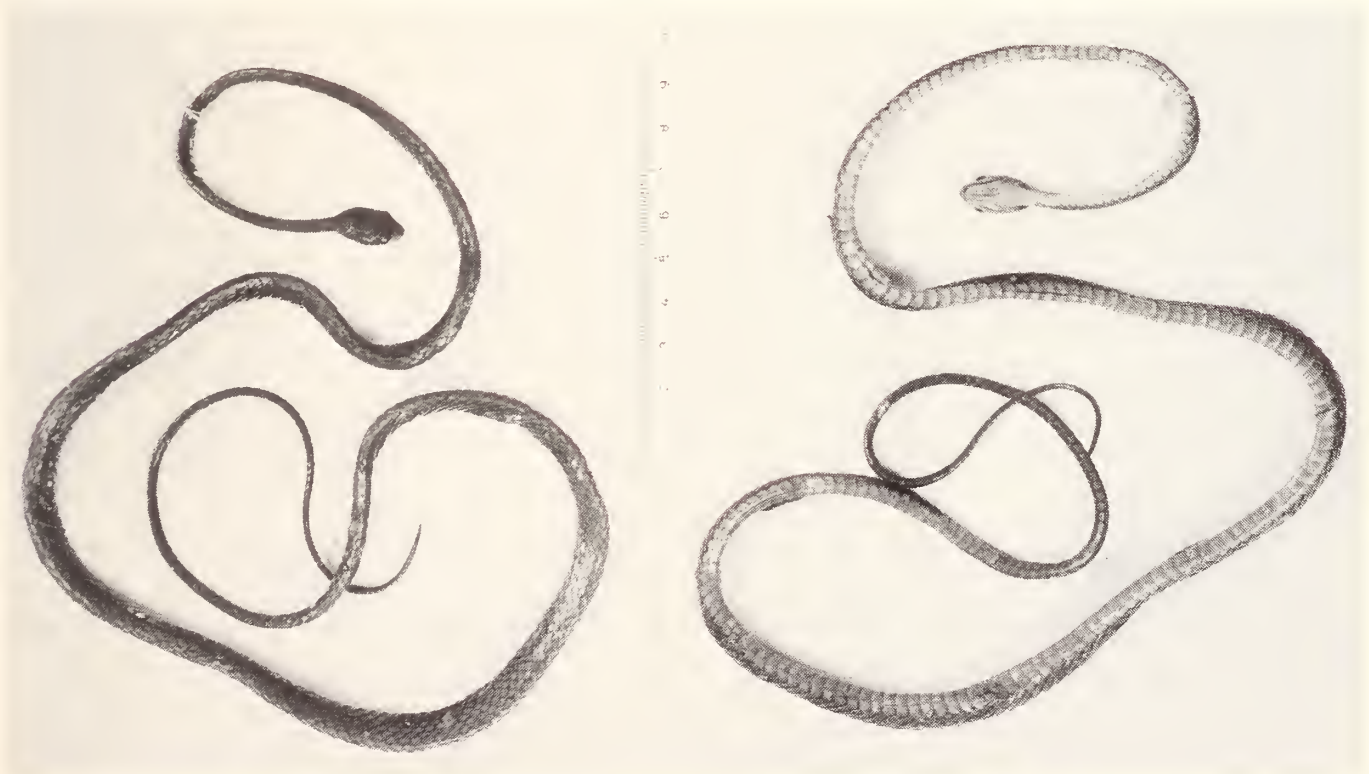


Fig. 2: Dorsal and ventral aspect of syntype (BMNH 1946.1.8.39) of *Dipsadoboa duchesnei* with undivided anal shield. Photo: Geert Brovad.

and 92—113+X pairs, males and females, respectively; 18—23+II+1 maxillary teeth; juveniles and semiadults pale brown or grey, color becoming dark brown, purplish dark brown and eventually uniform bluegreen with increasing size; anal glands extend to caudal scale no. 4—7.

Description

Lepidosis. Rostral 1.3—1.9 times as broad as deep, in broad contact with the internasals; frontal 1.3—1.8 times as long as broad; 1.1—1.5 times as long as its distance from end of snout, and 0.8—1.2 times as long as the suture between the parietals; loreal usually in contact with eye below a single preocular (for variation, see Table 1); 2 preoculars may rarely be present either excluding loreal from entering eye or being on each side of loreal which enters eye in-between (for variation, see Table 1); postoculars 2; temporals in 3 rows — (for variation, see Table 2); supralabials usually 8, third to fifth usually entering eye (for variation, see Table 2); infralabials usually 10, first five usually in contact with the anterior chin-shields (for variation, see Table 2); chin-shields in 2 pairs followed by 1—4 transverse rows of gulars, sometimes arranged more or less in pairs, and by 0—2 preventrals.

Dorsal scales smooth without apical pits. Dorsal scale row reduction formula (body) of the syntypes is as follows:

$$\text{male } \frac{17}{\text{p}+7} \frac{6+7 \text{ (141)}}{(140)} \quad \frac{15}{3+4} \frac{3+4 \text{ (142)}}{(143)} \quad \frac{13}{\text{---}} \text{ (BMNH 1921.11.12.8)}$$

$$\text{female } \frac{17}{3+4} \frac{3+4 \text{ (135)}}{(137)} \quad \frac{15}{\text{p}+v} \frac{\text{p}+6 \text{ (140)}}{(141)} \quad \frac{13}{\text{---}} \text{ (RGMC 476)}$$

giving the standard count 17-17-13 shared by all specimens. The reduction to 13 rows is achieved within the interval of VS no. 136—164 in males, and within the interval of VS no. 136—162 in females.

Scale row reduction formula (tail):

$$8 \text{ (1—3)} - 6 \text{ (2—7)} - 4 \text{ (4—26)} - 2 \text{ (43—100)} \text{ males (N = 29)}$$

$$8 \text{ (1—4)} - 6 \text{ (2—6)} - 4 \text{ (6—29)} - 2 \text{ (54—88)} \text{ females (N = 30)}$$

Ventrals angulate 202—220 in males, 198—214 in females (an obviously aberrant female has only 185 ventrals, and in addition 7 unilateral half ventrals inserted at various positions); anal undivided (divided in three specimens including one of the syntypes; subcaudals 97—120+X paired (some rarely single) in males and 92—113+X in females, tail ending in an elongated, rounded scale.

Dentition. Maxillary teeth 18—23+II+1 (0 — in one specimen); palatine teeth 12—16.

Dimensions. Total length of syntypes 78 cm (male) and 70 cm (female). Largest male (ZMUC R63886) 140 cm and largest female (MNHN 1966.734) 99 cm; smallest specimen (MNHN 1902.106 — type *myops*) with umbilical scar 28 cm (all measurements to nearest centimeter).

Hemipenes. In situ the organs extend to subcaudal scute no. 6—9 (to 9 in one specimen only of 23); sulcus undivided; base with small spines; proximal portion of organ with relatively large, recurved spines; in everted condition sulcus of left hemipenis is flanked by two rows of enlarged spines on the medial side and a single

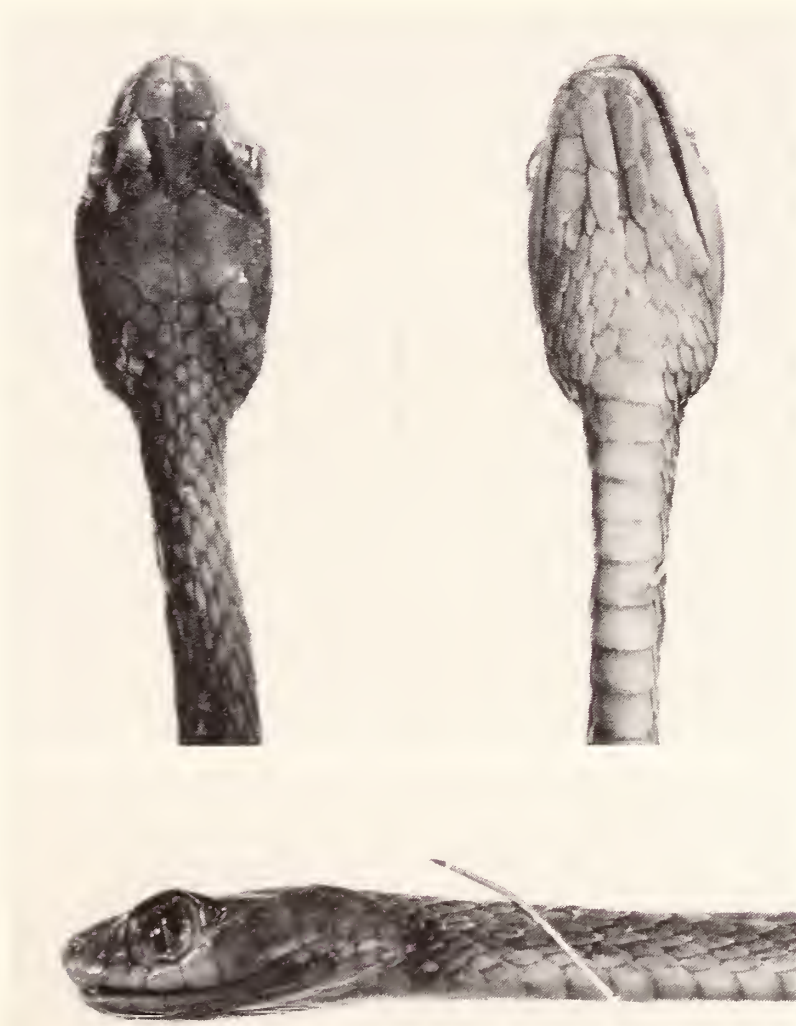


Fig. 3: Dorsal, ventral, and lateral views of the head of the syntype (RGMC 476) of *Dipsadoboa duchesnei*. Photo: Geert Brovad.

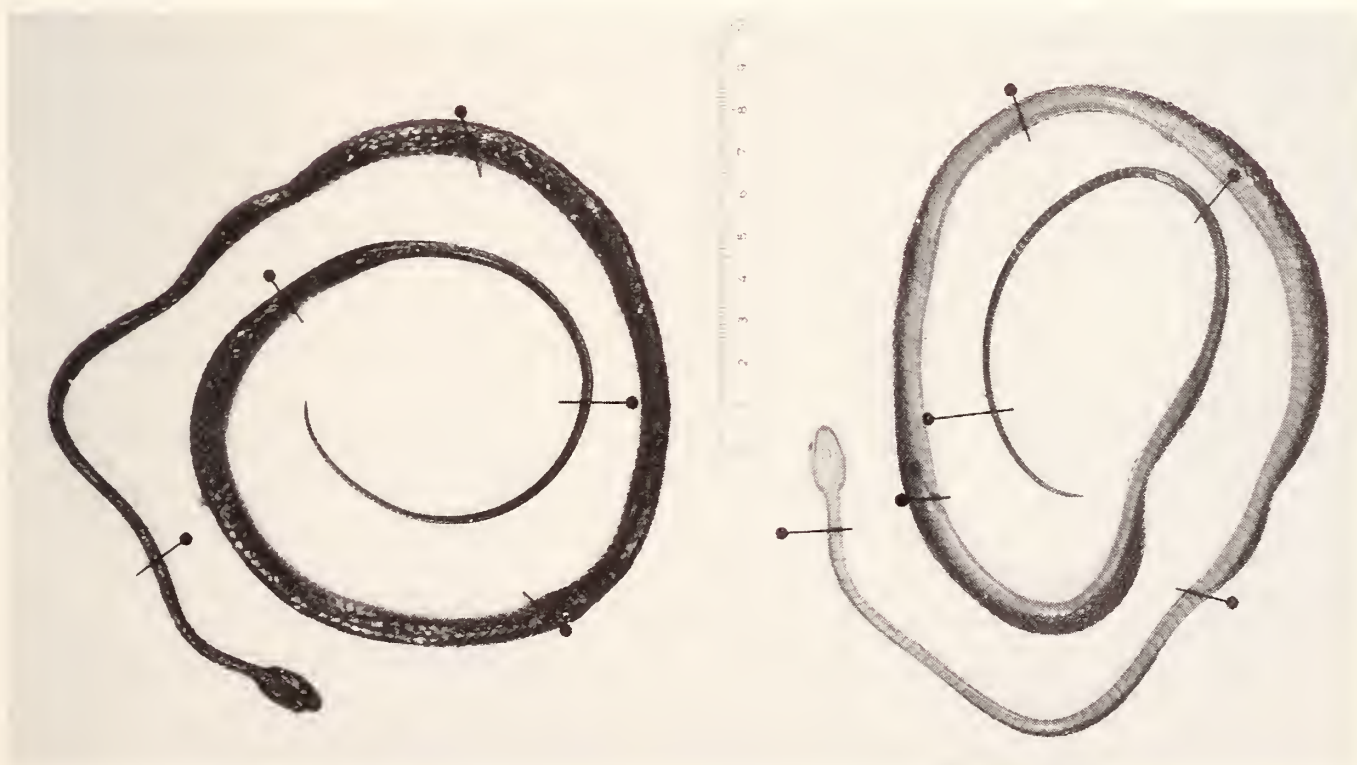


Fig. 4: Dorsal and ventral aspect of syntype (RGMC 476) of *Dipsadoboa duchesnei* with divided anal shield. Photo: Geert Brovad.

Table 1: Number of various character states as to the loreal-preocular pattern in *Dipsadoboa duchesnei* and *D. brevirostris* (both sides have been scored). State A: Loreal partly or totally fused with preocular. State B: Loreal partly or totally fused with one of two preoculars. State C: Loreal present, contacting eye below preocular. State D: Loreal present, contacting eye in between two preoculars. State E: Loreal present, isolated from eye by one preocular. State F: Loreal present, isolated from eye by two preoculars.

	State A	State B	State C	State D	State E	State F
<i>Dipsadoboa duch.</i>	37	2	56	1	18	6
<i>Dipsadoboa brev.</i>					26	

Table 2: Variation in numbers of labials and temporals in *Dipsadoboa duchesnei* and *D. brevirostris* (both sides have been scored). A: Number of supralabials (numbers in parentheses = supralabials in contact with eye). B: Number of infralabials (numbers in parentheses = number of infralabials in contact with anterior chin-shields). C: Number of temporals — primary, secondary, and tertiary ones (a zero indicates contact of a supralabial with a parietal: the fraction 1/2 indicates one scale above and two below and 2/1 vice versa).

A		7 (3—5)		8 (3—5)		8 (4—5)		9 (3—6)		9 (4—6)		N															
<i>Dipsadoboa duchesnei</i>		2		100		4		1		5		112															
<i>Dipsadoboa brevirostris</i>				24						2		26															
B		8 (4)		9 (4)		9 (5)		10 (4)		10 (5)		11 (4)		11 (5)		N											
<i>Dipsad. duch.</i>		2		20		3		22		61		1		3		112											
<i>Dipsad. brev.</i>				16		1		3		5		1				26											
C		0-1-2		1-0-1		1-0-2		1-1-1		1-1-1/2		1-1-2/1		1-1-2		1-2-1		1-2-2		1-3-2		2-1-2		2-2-2		N	
<i>Dipsad. duch.</i>		1		2				10		2		1		91		1		3		1		5		1		118	
<i>Dipsad. brev.</i>						2		1						21								2				26	

row at the lateral side, in the right penis the rows are arranged vice versa; on distal half of organ spines decrease in size and merge into deep papillate calyces (in contrast to Bogert (1940) who described the calyces as having denticulated edges).

Internal morphology. Tongue sheath extending to ventral scute (VS) no. 10–13 (4.7–6.4 % VS) in males and to VS no. 9–14 (4.4–6.9 % VS) in females.

Tip of heart extending to VS no. 69–80 (32.9–37.6 % VS) in males and to VS no. 65–80 (32.8–39.4 % VS) in females. Trachea extending to heart tip or up to three ventrals posterior to heart. Left lung absent or vestigial, up to 2½ ventrals long.

Anterior end of liver situated at VS no. 81–96 (39.1–45.2 % VS) in males and to VS no. 79–92 (38.5–45.3 % VS) in females. Absolute distance (VS) heart tip to anterior end of liver 12–21 and 11–19, males and females, respectively.

Right kidney longer or just as long as left one (left kidney 1VS longer than right in a single specimen); absolute length (right/left 12–18/11–15 (5.5–8.4/5.2–7.4 % VS) in males and 12–16/10–15 (5.7–7.9/4.9–7.4 % VS) in females. Anterior tip of kidneys situated at VS no. 179–199/182–201 (86.2–90.6/88.4–92.5 % VS) in males and at VS no. 177–193/181–197 (88.7–91.0/90.6–92.3 % VS) in females. Posterior end of kidney situated at VS no. 193–211/196–214

(95.3—97.1/96.6—97.7 % VS) in males and at VS no. 191—207/192—209 (95.6—97.1/96.6—98.0 % VS) in females. Absolute distance (VS) posterior end right kidney to anal scale 6—9 in both sexes.

Anal gland extending to caudal scute (CS) no. 4—7 and 5—7, males and females, respectively.

Coloration (preserved condition). Juveniles and semiadults pale brown or pale grey above; underside body whitish, cream or pale brown, usually growing a little darker posteriorly on body and tail; color of labials usually like color of venter anteriorly.

At a length of approximately 60 cm (much variable) the color of the dorsum turns greybrown, redbrown or dark brown; color of venter also turns darker, often a paler version of the color of the dorsum, starting from behind and the pigmentation may also impinge on the labials.

At a length of approximately 70—80 cm (also much variable) the brown color of the dorsum gets a purple, bluish or violet hue and the ground color may gradually change to bluishgreen above, apparently starting from the flanks as a median brownish band on the dorsum occasionally can be observed. Color of venter changes in a similar way eventually becoming pale blue or pale green all over, including the labials. Interstitial skin becomes black in some of the larger specimens.

The bluish color predominates in males, perhaps just reflecting the apparent fact that males tend to grow larger than females. The above mentioned values are very much variable as indicated. The longest male (140 cm) is thus brilliantly bluegreen, whereas the next longest (125 cm) is warm brown, and the third longest (122 cm) is bluish grey.

Biology

Almost nothing has been published on the biology of *D. duchesnei*. The long and slender body and the angulated ventrals, however, leave no doubt as to an aboreal mode of life, and it is a typical member of the fauna of “la forêt équatoriale” (Laurent, 1954).

The very large eye (longest horizontal diameter of the eye 1.1—1.4 times the length of the snout in front of the eyes) further leaves no doubt as to a nocturnal way of life.

Stomach contents have revealed that *D. duchesnei* may prey on frogs (Bogert, 1940).

A pregnant female (81 cm) had four eggs in its oviducts.

Distribution

West and central African rainforests from South Nigeria eastwards through South Cameroon, South Central African Republic and North Zaire to the Central African Lakes (Uganda — Hughes, 1983) and southwards through Gabon, Congo and Zaire to approximately 6° S (Fig. 5). Witte (1953) recorded a specimen of *D. duchesnei* from Pelenge (8° 40' S); the specimen, however, belongs to *D. shrevei*, and so does a specimen from Bukotsa (Witte, 1975).

Localities and material examined

Localities preceded by an asterisk (*) have not been traceable. Without locality: NHMB 11420, NMW 23991. CAMEROON: Batouri district BMNH 1935.2.6.18; Batouri district (04° N, 14° 14' E) BMNH 1934.12.1.31; Bipindi (Sternfeld, 1908, 1909) MCZ 29353; Bityi BMNH

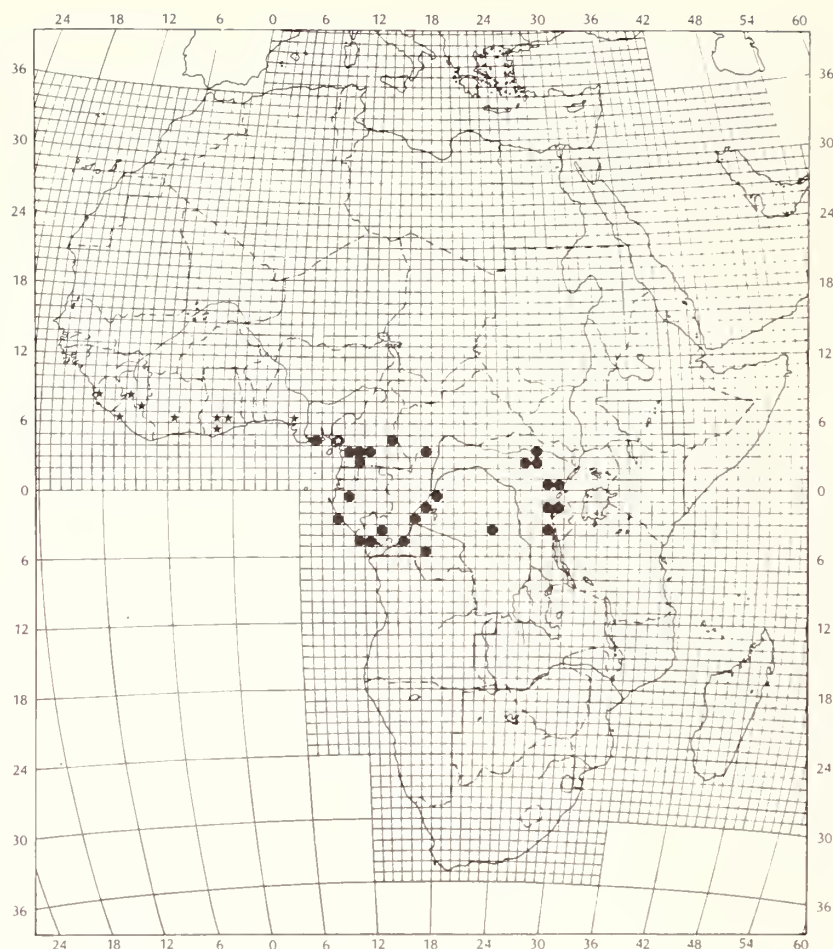


Fig. 5: Distributions of *Dipsadoboa duchesnei* (dots) and *D. brevirostris* (stars).

1909.7.9.9, BMNH 1913.10.29.9; *Bona Manga FMNH 190752; Dibongo (Müller, 1910; Lampe, 1911) MCZ 22209; Duala ZMUC-R6324; Duala (4 mls E.-Yaounde Rd.) BH 3451; Kumba (Joger, 1982) ZFMK 19289; Mbikiliki MHNG 1512.07; Mukundange (Mertens, 1940; Eisentraut, 1963); Nkoemvon MHNG 1323.04; Nyong River ZMUC-R63886; Ototoma MHNG 1323.05; "South Cameroon" (Sternfeld, 1908, 1909) ZMB 21709, ZMB 21709 A; *Zoma BMNH 1906.5.28.83. CENTRAL AFRICAN REPUBLIC: La Maboke (Roux-Esteve, 1965) MNHNP 1963.882. CONGO: no locality MNHNP 1894.167, MNHNP 1966.735; Dimonika (Villiers, 1966; Trape, 1985) MNHNP 1966.734, MNHNP 1987.1359; Loango (Mocquard, 1902) MNHNP 1900.2; Sibiti (Villiers, 1966) MNHNP 1965.16. GABON: no locality (Chabanaud, 1917) MHNG 1512.06, MNHNP 1901.553, MNHNP 1902.106; *Kama ZFMK 31637; Lambaréné (Chabanaud, 1916) MNHNP 16227; *Ndoma BMNH 1908.5.25.24; Setta Cama (Mocquard, 1902) MNHNP 1894.268. NIGERIA: Port Harcourt (Romer, 1953) MCZ 51699; *Gana Gana-Sagbama, Niger Delta (Werner, 1913). ZAIRE: Bikoro (Laurent, 1956) RGMC 10611; *Boteka RGMC 84.25.R.114, RGMC 84.25.R.115; Gigungi (Laurent, 1956) RGMC 7701; Irangi (Laurent, 1960) RGMC 20270; Kamituga (Laurent, 1956) RGMC 16438; Keseki (Laurent, 1952, 1956) RGMC 14845; Kinshasa (Audenaerde, 1965 — expectable) ZFMK 46204; Lubile (Laurent, 1956) RGMC 18552; Lukolela (Bogert, 1940) AMNH 45929, AMNH 45930; Luluabourg (Laurent, 1956) RGMC 2361; Manguretsipa (Laurent, 1956) RGMC 18551; Makayoba IRSNB 13351; *Mandungu (Boulenger, 1901; Schmidt, 1923; Laurent, 1956) RGMC 476; Medje (Boulenger, 1919b; Schmidt, 1923; Laurent, 1956) AMNH 12212, RGMC 1627; Molindi (Witte, 1941; Laurent, 1956) RGMC 14356; Mutsora (Witte, 1955 & Witte, 1975) RGMC 76.3.R.220; Nala (Schmidt, 1923) AMNH 12213; Omandiungu RGMC 29237—29240; Rungu (Laurent, 1956) RGMC 4307; *Umangi (Boulenger, 1901; Schmidt, 1923; Laurent, 1956) BMNH 1946.1.8.39.

Remarks

Boulenger (1901) erroneously described *Dipsadoboa duchesnei* as having a divided anal shield. One of the syntypes actually does not have this condition and the normal condition is an undivided anal shield (Müller, 1910; present study).

Boulenger's action misled Sternfeld (1908) to describe *Dipsadomorphus viridis* and *D. brevirostris* with undivided anal shields and two preoculars. As pointed out by Müller (1910) the presence of two preoculars is just another way to express the condition: loreal contacts eye (Boulenger, 1901). Considering the latter fact, and the gradual color change apparently taking place from juvenile to adult in *D. duchesnei*, there seems no doubt that *viridis* is a junior synonym of *duchesnei* as already proposed by Boulenger (in Müller, 1910; Boulenger, 1919a). The high number of ventrals (222 — including possible preventrals) and high number of subcaudals ($121 + x$) are fully equated in another Cameroon specimen (MHNG 1512.07) having 220 ventrals and 118 pairs of subcaudals.

Dipsadomorphus brevirostris has also been referred to the synonym of *Dipsadoboa duchesnei* (Müller, 1910; Boulenger, 1919a, b). For two of the syntypes (ZMB 21709—21709A) this is certainly the case, the third syntype from Yabassi, however, has a high number of ventrals in combination with a low number of subcaudals, which is different from sympatric Cameroon specimens (Laurent, 1956). Unfortunately, it has not been possible to trace this individual, which will cause nomenclatorial changes (see below).

Considering the fact that an undivided anal shield is the normal condition in *D. duchesnei* and considering the intraspecific variation of the lateral head shields of this species (Müller, 1910; present study) the following species are referred to the synonym of *duchesnei*:

1. *Leptodira nigeriensis* Werner (1913) — a female having a relatively high number of ventral scutes (213), however, females with 214 VS have been recorded from Yaounde, Medje, and Congo, respectively.
2. *Chamaetortus aulicus ellenbergeri* Chabanaud (1916) — a juvenile female having preocular in contact with frontal (a condition described by Müller (1910)).
3. *Dipsadomorphus myops* Chabanaud (1917) — a juvenile female having two preoculars excluding loreal from eye (a condition described by Müller despite the fact that the specimen (MNHNP 1902.106) has one preocular only).

Male specimens of *Dipsadoboa duchesnei* from Cameroon tend to have higher ventral counts than the more eastern populations thereby indicating a cline towards *Leptodira guineensis* Chabanaud (1920) in West Africa. This trend, however, is not reflected in the ventral counts of the females, and there are significant differences in the relative positions of the heart and liver (Fig. 6) indicating that *guineensis* is a valid taxon as proposed by Loveridge (1941) and Laurent (1956). Tentatively I include Sternfeld's (1908) record from Yabassi in this taxon thereby indicating sympatry with *duchesnei* and therefore considered under the name *Dipsadoboa brevirostris*.

Dipsadoboa brevirostris (Sternfeld, 1908) n. comb.

Figs. 7–8.

Dipsadoboa brevirostris Sternfeld (part), 1908: 411; holotype (apparently lost) collected at Yabassi, Cameroon by Mr. Riegler.

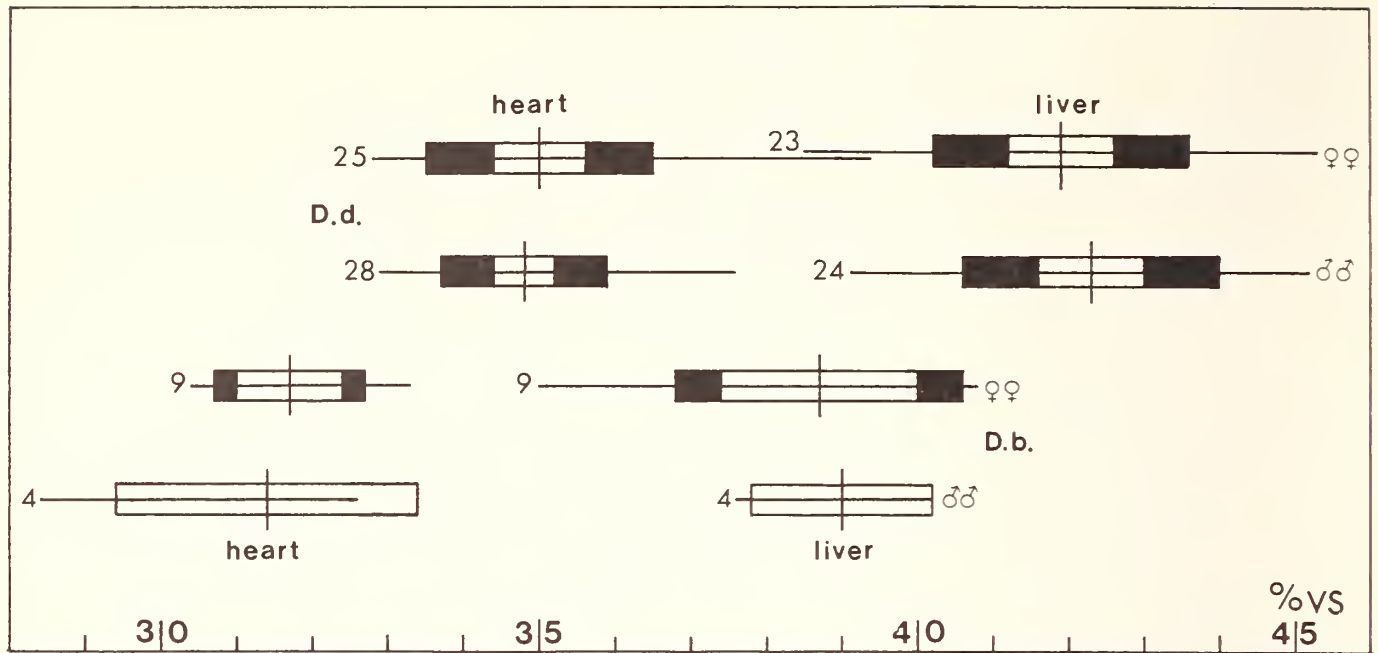


Fig. 6: Variation in relative positions (position in number of ventral scales expressed as percentage of total number of ventral scutes). Relative positions of posterior end of heart and anterior end of liver. Horizontal line indicates sample range, and vertical line sample mean. Black rectangle represents one standard deviation on each side of the mean, and white rectangle 2 standard errors on each side of the mean. Horizontal line preceded by sample size.

Leptodira guineensis Chabanaud, 1920: 491; syntypes apparently lost (Lescure, pers. comm.). Synonymized with *Leptodira nigeriensis* by Werner (1924a: 40), and with *Dipsadoboa duchesnei* by Bogert (1940: 64).

Dipsoglyphophis guineensis, Barbour & Amaral, 1927: 26.

Crotaphopeltis duchesnii guineensis, Loveridge, 1941: 122.

Dipsadoboa duchesnei guineensis, Laurent, 1956: 218.

Diagnosis

A West African forest species of *Dipsadoboa* which has the following character combination; dorsals in 17-17-13 rows; ventrals 223–229 and 217–226, males and females, respectively; anal shield undivided; subcaudals in 91–108 and 96–111 pairs, males and females, respectively; 19–21+II–1(2) maxillary teeth; all specimens examined (including a pregnant female) pale brown to brown; anal glands extend to caudal scale no. 4–7.

Description

Lepidosis. Rostral 1.4–1.8 times as broad as deep, in broad contact with internasals; frontal 1.5–1.8 times as long as broad, 1.2–1.5 times as long as its distance from end of snout, and 0.9–1.1 times as long as the suture between the parietals; loreal not in contact with eye below the single preocular, except in the holotype; postoculars invariably 2; temporals in three rows (for variation, see Table 2); supralabials usually 8, third to fifth usually entering eye (for variation, see Table 2);

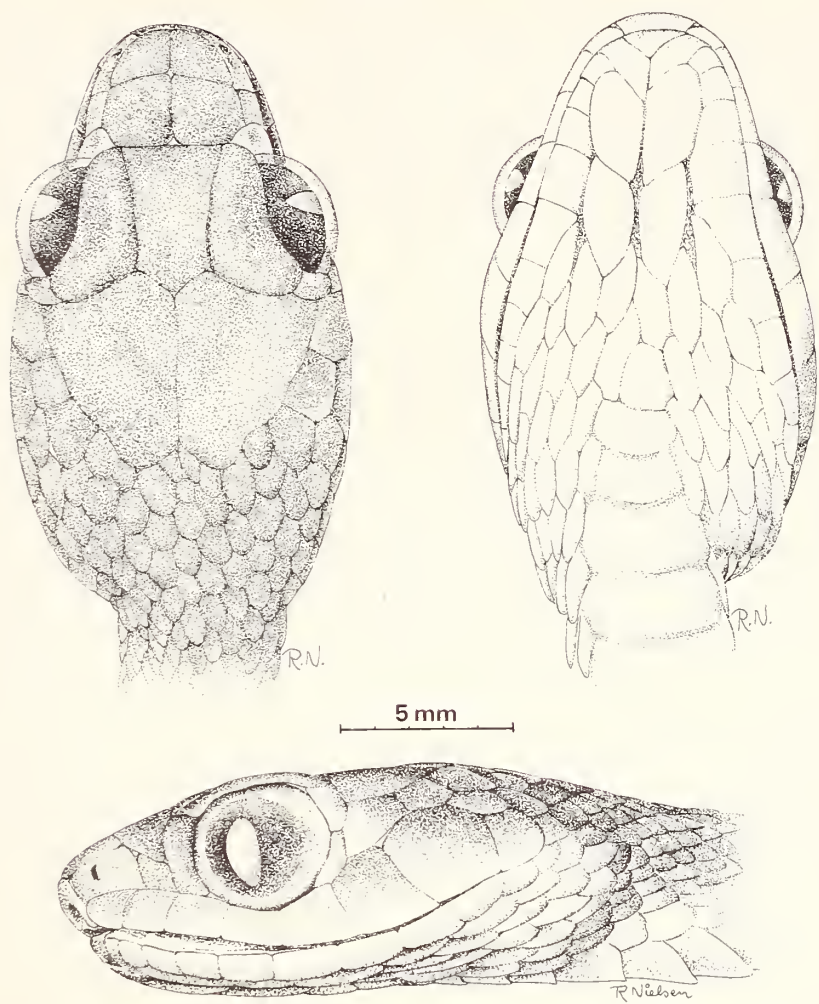


Fig. 7: Dorsal, ventral, and lateral view of the head of *Dipsadoboa brevirostris* (BMNH 1921.11.12.8; Chabanaud, 1921). Drawing: Robert Nielsen.

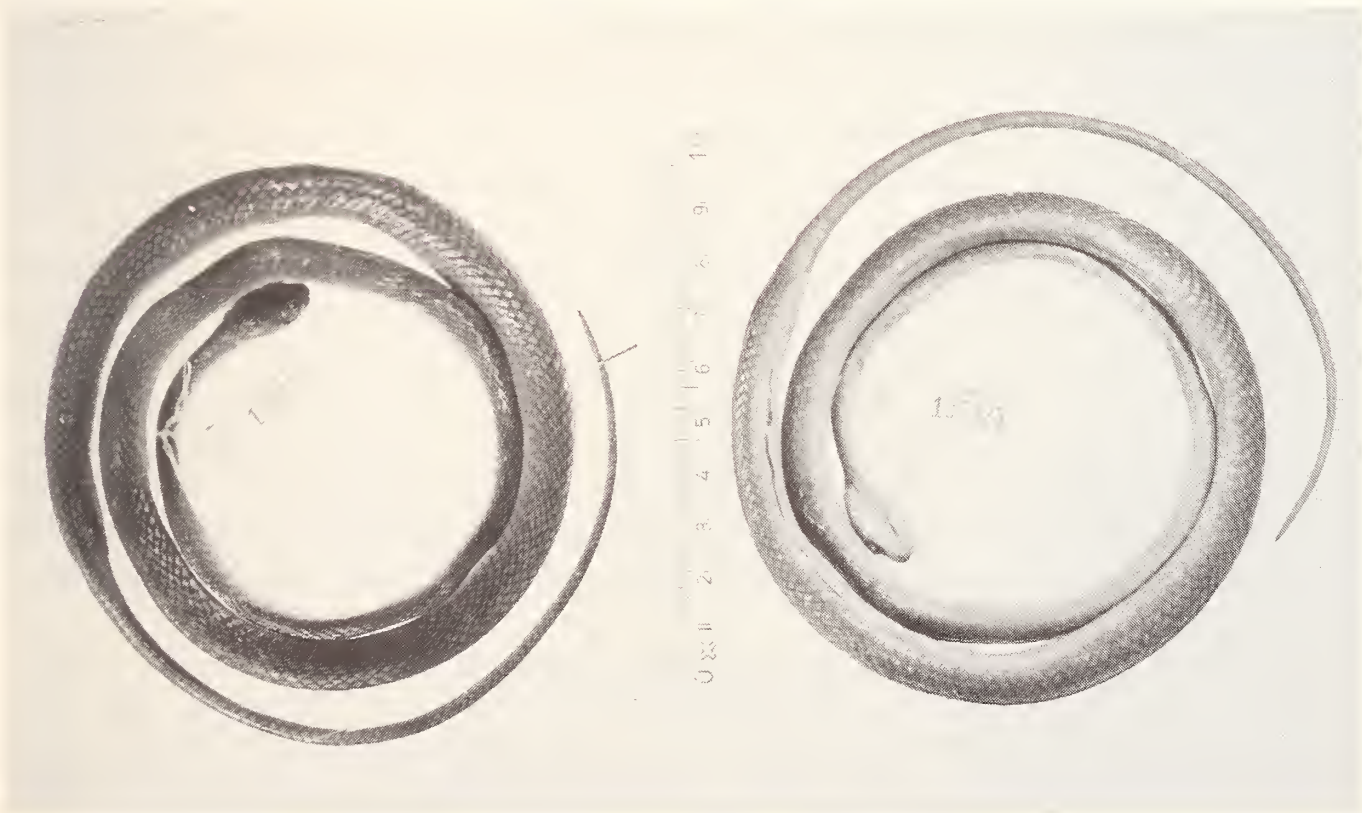


Fig. 8: Dorsal and ventral aspect of *Dipsadoboa brevirostris* (CAS 135323). Photo: Geert Brovad.

infralabials usually 10 four first usually in contact with anterior pair of chin-shields (for variation, see Table 2); chin-shields in 2 pairs, followed by 1–4 rows of gulars, sometimes arranged more or less in pairs, and by 0–2 preventrals.

Dorsal scale rows smooth without apical pits. Dorsal scale row reduction formula (body) of BMNH 1921.11.12.8 (Chabanaud, 1921) is as follows:

$$\begin{array}{ccc} \text{—p (149)} & 3+4 \text{ (159)} & \\ 17 \frac{\text{—p (149)}}{\text{—p (149)}} & 15 \frac{3+4 \text{ (159)}}{3+4 \text{ (149)}} & 13 \end{array}$$

giving the standard count 17-17-13 found in all specimens examined. The reduction to 13 scale rows is achieved within the interval of VS no. 154–163 in males and VS no. 147–159 in females.

Scale row reduction formula (tail):

8 (2–4) — 6 (4–5) — 4 (11–21) — 2 (54–75) males (N = 4)

8 (1–3) — 6 (3–5) — 4 (7–19) — 2 (53–83) females (N = 9)

Ventrals angulate 223–229 in males and 217–226 in females; anal undivided; subcaudals paired in 91–108 pairs in males and 96–111 in females, respectively. (Chabanaud (1920) gave the count 72 for one of his females; this specimen most probably had broken tail); tail ending in an elongated, rounded scale.

Dentition. Maxillary teeth 19–21+II+1: palatine teeth 13–15.

Dimensions. Largest male (MCZ 67899) 80 cm and largest female (CAS 127475) 80 cm.

Hemipenes. In situ the organs extend to subcaudal scute no. 9–10 (two specimens), otherwise similar to organs of *D. duchesnei*.

Internal morphology. Tongue sheath extending to VS no. 14–15 (6.3–6.7 % VS) in males and to VS no. 11–14 (4.9–6.3 % VS) in females.

Tip of heart extending to VS no. 65–73 (28.4–32.7 % VS) in males and to VS no. 66–73 (30.4–33.3 % VS) in females. Trachea extending to heart tip or up to two ventrals more posterior to tip of heart. Left lung vestigial, up to 3 ventrals long.

Anterior end of liver situated at VS no. 86–90 (37.6–40.2 % VS) in males and to VS no. 77–89 (35.0–40.8 % VS) in females. Absolute distance (VS) heart tip to anterior end of liver 15–21 in males and 10–20 in females, respectively.

Right kidney longer than left one; absolute length (right/left) 18–22/16–18 (8.0–9.6/7.1–7.9 % VS) in males and 13–18/11–17 (5.9–8.1/5.0–7.6 % VS) in females. Anterior tip of kidneys situated at VS no. 193–199/198–204 (86.2–88.4/88.4–90.2 % VS) in males and at VS no. 192–198/195–204 (87.6–89.5/89.2–91.9 % VS) in females. Posterior end of kidneys situated at VS no. 211–221/215–222 (94.2–96.5/96.0–97.3 % VS) in males and at VS no. 207–216/208–218 (95.4–96.4/95.9–96.9 % VS) in females. Absolute distance (VS) posterior end right kidney to anal scale 8–13 and 8–10, males and females, respectively.

Anal gland extending to caudal scute no. 5 and 4–7, males and females, respectively.

Coloration (preserved condition). All specimens (53–80 cm) including pregnant female (71 cm) pale brown or pale greybrown above; venter and labials whitish or cream, posterior part of the tail, upper part of supralabials and posterior infralabials if at all, slightly pigmented.

Biology

Dipsadoboa brevirostris has very large eyes (longest horizontal diameter of the eye 1.1–1.3 times the length of the snout in front of the eyes) and angulated ventrals, probably reflecting the same mode of life as postulated for *D. duchesnei*. A pregnant female (71 cm) had four eggs in its oviducts, each measuring about 27x8 mm (Loveridge, 1941).

Distribution

West African rainforests from Sierra Leone to Southwest Cameroon (Fig. 5).

Localities and material examined

SIERRA LEONE: Port Loko (Menzies, 1966) BMNH 1951.1.6.95. LIBERIA: Harbel (Loveridge, 1941) USNM 109645. GUINEA: no locality MCZ 18016; Dieke (Chabanaud, 1920; 1921; Angel, 1932) BMNH 1921.11.12.8; Seredou MNHNP 1960.147. IVORY COAST: Lamto (Roux-Esteve, 1969). GHANA: Bobiri Forest Reserve MCZ 67899; Bunso CAS 127475; Kade BH C10D1, CAS 135322–323, 146292;? Legon MHNG 1363.18. NIGERIA: Epe (100 miles E. of) BMNH 1961.1873. CAMEROON: Yabassi (Sternfeld, 1908).

Remarks

In spite of the general recognition of the present taxon, the differences between this and *Dipsadoboa duchesnei* are not especially pronounced. The size of the rostral shield (Chabanaud, 1920) cannot be used for separating the two taxa, nor can the condition (divided/undivided) of the anal shield (Boulenger, 1901; Sternfeld, 1908; Chabanaud, 1920). The condition (not contacting eye) of the loreal shield can only partly be used to separate the two forms (Table 1), and so can the condition: 4 infralabials only contact anterior pair of chin-shields (Table 2).

The number of ventral scutes seems to separate the two taxa with one exception, i. e., one of Chabanaud's (1920) syntypes had only 213 ventrals. Unfortunately, this count cannot be verified as the syntypes are missing (Lescure, pers. comm.)! Angel (1932), unfortunately, mixed Boulenger's (1901) and Chabanaud's (1920) counts giving the range of variation of the ventrals to 201–224 in *brevirostris*, a range of variation still appearing in more recent literature, e. g., Villiers (1975) and Doucet (1963).

The difference in ventral counts also reflect differences in the relative positions of the inner organs and there are significant differences in the positions of the heart and the liver (Fig. 6). With respect to the hemipenes there might be differences here as well as the lengths of the hemipenes in two specimens of *brevirostris* varied between 9–10 CS and between 6–9 in 23 specimens of *duchesnei*, only one having a length of 9 CS.

Zoogeographical evidence should not, and will not be used for judging taxonomic decisions, however, it is interesting to note that two other rain forest species, i. e., *Pseudohaje goldii* and *P. nigra* have almost identical distribution areas to those of *D. duchesnei* and *D. brevirostris*, respectively (Hughes, 1976; Courtois, 1979) (Fig. 9).

Concluding remarks

The present taxa seem to be very closely related and they probably constitute a monophyletic subgroup within *Dipsadoboa*.

With this third contribution to the systematics of *Dipsadoboa* the species with paired subcaudal scutes have been treated. The species with single caudal scutes will

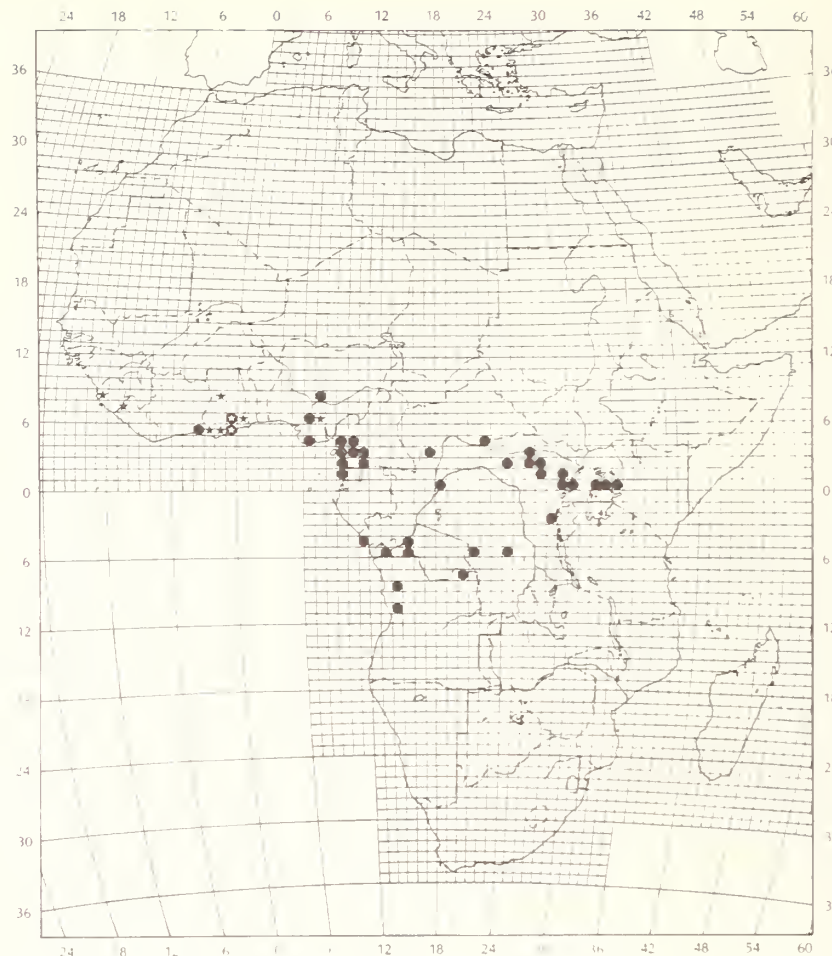


Fig. 9: Distributions of *Pseudohaje goldii* (dots) and *P. nigra* (stars). Compare with Fig. 5. Map modified from Hughes (1976) — by incorporation of Courtois (1979).

be treated in the fourth and last contribution (Rasmussen, in prep) which also will include keys and phylogenetic considerations.

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Zusammenfassung

Gegenwärtig werden zwei Unterarten von *Dipsadoboa duchesnei* unterschieden: *D. d. duchesnei* und *D. d. guineensis*. Die Unterschiede der beiden Formen wurden im Rahmen einer Neuordnung der Gattung analysiert. Es ergaben sich Unterschiede in den Schuppenzählungen und der relativen Position gewisser Organe. Aufgrund der vermeintlichen Überlappung der Ausbreitungsgebiete werden die beiden Taxa als vollgültige Arten angesehen, und folgende taxonomische bzw. nomenklatorische Änderungen wurden deshalb vorgenommen:

1. *Dipsadoboa duchesnei* (Boulenger) wird als monotypische Art angesehen. Sie tritt in Nigeria, Kamerun, Gabun, Kongo, Zaire und der Zentralafrikanischen Republik auf.
2. *Dipsadoboa nigeriensis* (Werner) ist mit *Dipsadoboa duchesnei* synonym.
3. *Dipsadoboa brevirostris* (Sternfeld) hat Vorrang vor *Dipsadoboa guineensis* (Chabanaud) und ist eine gültige Art. Sie kommt von Sierra Leone bis Kamerun vor.

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